

## CLAIMS

### What is Claimed is:

1. A method of reinforcing a cylindrical underground pipeline, comprising the steps of:

laying an excavation coffer on the ground above the pipeline, front and rear faces of the coffer being placed transversely to the pipeline, each of said front and rear faces having along a lower edge thereof an indentation of a shape adapted to a cylindrical shape of the pipeline;

driving the coffer into the ground substantially until said indentations are brought up against the pipeline, and removing soil material between the front and rear faces of the coffer to provide access to an upper part of a wall of the pipeline;

further removing soil material under the pipeline from the inside of the coffer;  
and

installing at least one reinforcement around the pipeline in an interval between the front and rear faces of the coffer.

2. The method as claimed in Claim 1, wherein said reinforcement comprises at least one prestressing reinforcement clamped and anchored around the pipeline.

3. The method as claimed in Claim 1, further comprising the preliminary step of removing part of the soil material above the pipeline where the excavation coffer is to be laid.

4. The method as claimed in Claim 1, wherein the step of driving the excavation coffer into the ground comprises a first phase, wherein linear guides are driven vertically into the

ground on either side of the pipeline, and a second phase, wherein the front and rear faces of the coffer are slid along said linear guides.

5. The method as claimed in Claim 4, wherein the linear guides comprise sheet piles assembled into two curtains perpendicular to the pipeline on either side thereof.

6. The method as claimed in Claim 1, further comprising the step of engaging at least one arcuate duct under the pipeline by pushing said duct along a lower part of the wall of the pipeline, said at least one reinforcement being threaded into said duct.

7. The method as claimed in Claim 6, wherein the arcuate duct comprises two sections each covering substantially one quarter of a revolution, the two sections being pushed toward one another from two sides of the pipeline in order to meet underneath the pipeline.

8. The method as claimed in Claim 6, wherein the arcuate duct covers substantially half of one revolution and is pushed from one side of the pipeline until it appears on the opposite side.

9. The method as claimed in Claim 8, wherein the arcuate duct consists of a one-piece profile section, and wherein the coffer is driven into the ground and the soil material is removed so as to give access to more than half of a circumference on the upper part of the wall of the pipeline.

10. The method as claimed in Claim 6, wherein the arcuate duct comprises at least one profile section bent in the form of an arc of a circle, having a side open to the inside of the curvature of the duct in order to come up against the wall of the pipeline.

11. The method as claimed in Claim 10, wherein the arcuate duct is pushed with the aid of at least one actuator placed between a first bearing point fixed with respect to the coffer and a second bearing point mounted on the profile section.

12. The method as claimed in Claim 11, wherein the position of the second bearing point along the profile section is varied as the arcuate duct is being pushed.

13. The method as claimed in Claim 6, wherein a tool for decohesion of the soil material is placed in front of the arcuate duct during the engagement of the duct under the pipeline.

14. The method as claimed in Claim 6, wherein the step of further removing soil material under the pipeline from the inside of the coffer comprises sucking soil material into the duct during the engagement of the duct under the pipeline.

15. The method as claimed in Claim 6, wherein compressed air is expelled through orifices formed on lateral faces of the duct during the push of the duct under the pipeline.

16. The method as claimed in Claim 6, further comprising the step of threading into the arcuate duct an insert having at least one cell for receiving a reinforcement or a group of reinforcements.

17. The method as claimed in Claim 1, wherein the step of further removing soil material under the pipeline from the inside of the coffer comprises:

performing vertical excavations on both sides of the pipeline from within the excavation coffer, down to a level deeper than a bottom level of the pipeline;

digging a horizontal tunnel under the pipeline between the vertical excavations.

18. The method as claimed in Claim 1, wherein the horizontal tunnel is dug by means of a conveyor belt carrying excavation cups.

19. A method of repairing a cylindrical underground pipeline for the supply of fluid under pressure, which comprises installing reinforcements around different sections of the pipeline, wherein the installation of at least one reinforcement around a pipeline section comprises the steps of:

laying an excavation coffer on the ground above the pipeline section, front and rear faces of the coffer being placed transversely to the pipeline section, each of said front and rear faces having along a lower edge thereof an indentation of a shape adapted to a cylindrical shape of the pipeline;

driving the coffer into the ground substantially until said indentations are brought up against the pipeline section, and removing soil material between the front and rear faces of the coffer to provide access to an upper part of a wall of the pipeline section;

further removing soil material under the pipeline section from the inside of the coffer; and

installing at least one reinforcement around the pipeline section in an interval between the front and rear faces of the coffer.

20. The method as claimed in Claim 19, wherein said reinforcements comprise prestressing reinforcements clamped and anchored around the pipeline.

21. Method according to Claim 19, wherein the installation of the reinforcements is carried out with the fluid pressure in the pipeline being maintained.

22. Method according to Claim 19, wherein said reinforcements are final reinforcements.

23. Method according to Claim 19, wherein said reinforcements are temporary reinforcements, the method further comprising the following steps once the temporary reinforcements are installed:

making a trench to free a length of the pipeline;

carrying out repairs at the surface of the pipeline; and

placing final reinforcements around said length of the pipeline.